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COMMONWEALTH OF AUSTRALIA

PATENT SPECIFICATION

140,405

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Classes: 67.6; 68.8; 69.4

Drawing attached.

COMPLETE SPECIFICATION.

"Improvements in or relating to rotary air or gas compressors."

I, ARTHUR JOHN NORTHEY, Engineer, of 87 Crown Road, Queenscliff, Manly, in the State of New South Wales, Commonwealth of Australia, formerly of 75 Orchard Avenue, Parkstone, Dorset, England, hereby declare this invention and the manner in which it is to be performed, to be fully described and ascertained in and by the following statement:—

This invention relates to rotary air or gas compressors or vacuum pumps or compressed air motors of the kind in which a pair of co-acting bladed rotors, having blade-receiving recesses adjacent to the blades and rotating in opposite directions within a chamber into which a charge of air or other gaseous fluid is drawn in between the trailing sides of the blades simultaneously with the compression, on the leading sides of said blades, of the charge previously drawn in, is designed so that any compressed charge remaining in the chamber when the delivery valve closes, does not become a loss (as in a reciprocating compressor) but is trapped between

the co-acting blades of the rotors and expanded into the suction charge already drawn in and which is about to be compressed.

One form of such compressor is described in the specification of my Letters Patent No. 19032/34 of the Commonwealth of Australia with reference to figures 3 and 4 of the drawings forming part of such specification and is provided with inlet and exhaust ports in the covers of the said chamber, said ports being of arcuate form concentric with the respective rotor axes and controlled for opening and closing by the rotors. The inlet port extended over about 180° and in practice the inlet port has been extended around a somewhat greater angle but always arranged so that the inlet port is closed as the blade on the rotor controlling the inlet port enters the recess in the other rotor so that the pocket of compressed gas trapped between the blades does not blow back into the inlet port. At the usual speeds of up to about 1500 revolutions per minute the above described

by two discs 29,30 mounted upon the shaft 26, one at each side of the rotor 20 and rotating therewith. These discs are accommodated in recesses in the covers 9 and 10 and each of them has a port 31,32 through it corresponding with the pocket 24 in the rotor 20. The discs 29,30 may be made integral with or welded to the rotor 20 if so desired, but it is simpler to form them as separate entities.

The operation of the compressor illustrated is as hereinbefore described.

The machine described and illustrated will function also as a compressed air motor if the motive air is fed to the port 14 hereinbefore referred to as the outlet port and the exhaust air is removed by way of the port 13 hereinbefore referred to as the inlet port.

Having now fully described and ascertained my said invention and the manner in which it is to be performed, I declare that what I claim is:—

1. A rotary air or gas compressor or vacuum pump adapted for high speed operation, of the kind hereinbefore specified, having inlet and exhaust ports in the side walls of the chamber, the said ports being of arcuate form concentric with the respective rotor axes and the opening and closing of the exhaust port being controlled by one of the rotors, in which the inlet port extends over such a circular arc that it is not closed by the other rotor during at least a part of the period of the cycle in which the blade upon one rotor is in the recess upon the other rotor.

2. A rotary air or gas compressor or vacuum pump adapted for high speed opera-

tion, of the kind hereinbefore specified, having inlet and exhaust ports in the side walls of the chamber, the said ports being of arcuate form concentric with the respective rotor axes and the opening of the exhaust port being controlled by one of the rotors, in which the inlet port is an annulus completely surrounding the axis of the other rotor.

3. A rotary air or gas compressor or vacuum pump adapted for high speed operation and as claimed in either preceding claim, in which the radius of the external periphery of the exhaust port is equal to or greater than the radius of the rotor which opens and closes it (apart from the radius of the blade upon said rotor) and in which two discs are mounted one on each side of the rotor controlling the exhaust port for rotation with said rotor, the discs being received in recesses in the side walls of the chamber and having ports through them at least corresponding in size and position to the blade-receiving recess in the rotor, the said discs effecting the necessary sealing and opening and closing of the exhaust port.

4. A rotary air or gas compressor or vacuum pump adapted for high speed operation and of the kind hereinbefore specified, substantially as hereinbefore described and as illustrated in the accompanying drawings.

Dated this 12th day of October, 1949.

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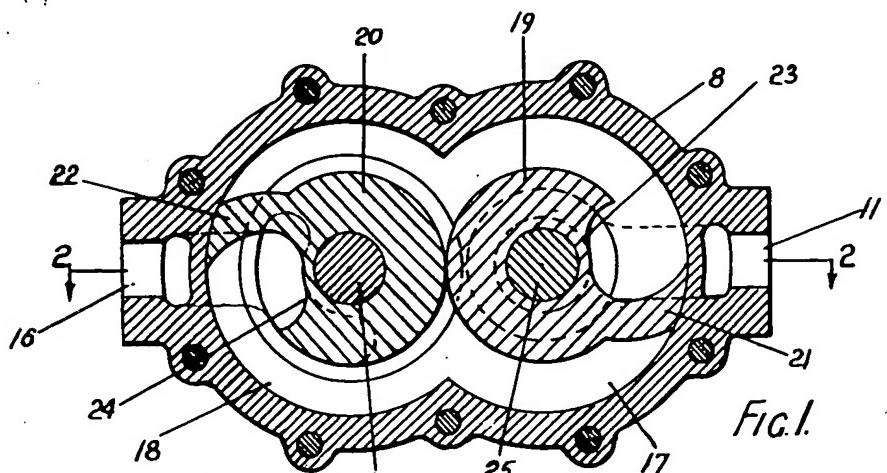


FIG.1.

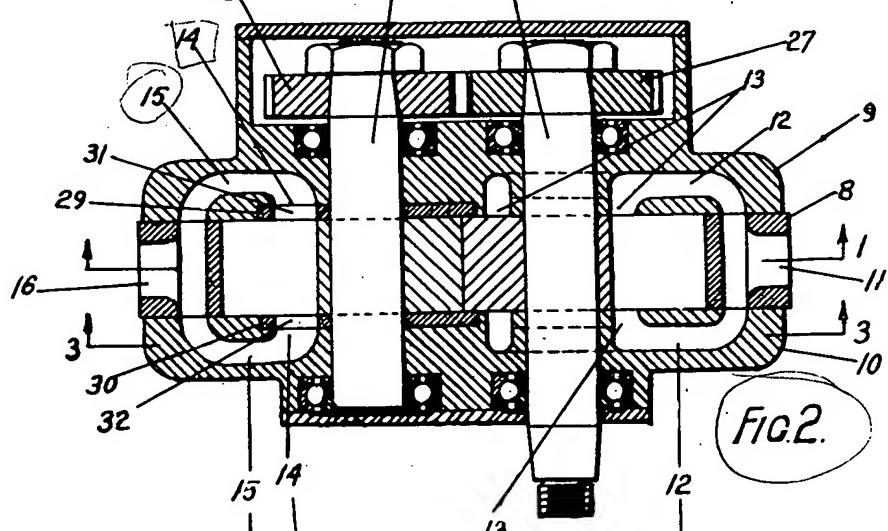


FIG.2.

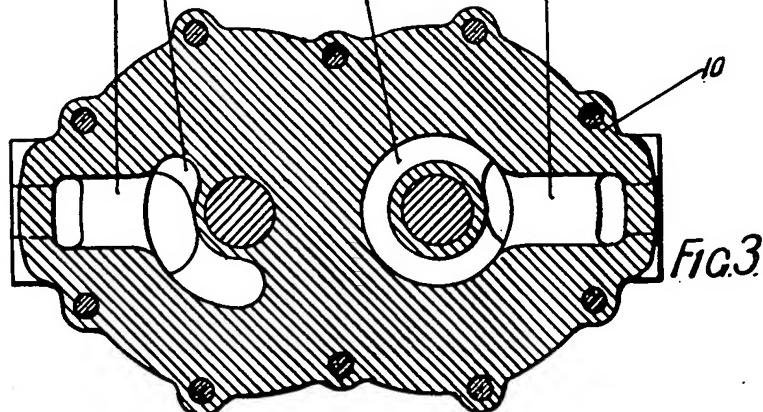


FIG.3.